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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Integral Consulting Inc.
Suite 190
285 Century Place
Louisville CO 80027

Report Date: May 15, 2019 14:15

Project: Solvay

Account #: 20003
Group Number: 2042194
State of Sample Origin: NJ

Electronic Copy To	Integral Consulting Inc.	Attn: Glenn Esler
Electronic Copy To	Integral Consulting Inc.	Attn: Erin Palko
Electronic Copy To	Solvay	Attn: Mark Christensen
Electronic Copy To	Solvay	Attn: Mitch Gertz

Respectfully Submitted,

Lyssa M. Longenecker

Lyssa M. Longenecker
Specialist

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To view our laboratory's current scopes of accreditation please go to https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/ . Historical copies may be requested through your project manager.

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SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
V915 Grab Water	04/29/2019 09:00	1049825
Field Blank Grab Water	04/29/2019 09:00	1049826

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **V915 Grab Water**
Solvay Solexis, Inc.

Project Name: **Solvay**

Submittal Date/Time: 05/03/2019 18:11
Collection Date/Time: 04/29/2019 09:00

Integral Consulting Inc.
ELLE Sample #: WW 1049825
ELLE Group #: 2042194
Matrix: Water

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14903	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.25	0.83	1
14903	Perfluorodecanoic acid	335-76-2	4.2	0.75	1.7	1
14903	Perfluorododecanoic acid	307-55-1	N.D.	0.42	1.7	1
14903	Perfluoroheptanoic acid	375-85-9	4.1	0.33	0.83	1
14903	Perfluorohexanesulfonic acid	355-46-4	0.56 J	0.33	1.7	1
14903	Perfluorohexanoic acid	307-24-4	3.5	0.33	1.7	1
14903	Perfluorononanoic acid	375-95-1	430	3.3	17	10
14903	Perfluorooctanesulfonic acid	1763-23-1	1.2 J	0.33	1.7	1
14903	Perfluorooctanoic acid	335-67-1	79	0.25	0.83	1
14903	Perfluorotetradecanoic acid	376-06-7	N.D.	0.25	0.83	1
14903	Perfluorotridecanoic acid	72629-94-8	N.D.	0.33	0.83	1
14903	Perfluoroundecanoic acid	2058-94-8	24	0.33	1.7	1

The sample injection internal standard peak areas were outside of the QC limits for both the initial injection and the re-injection. The values here are from the initial injection of the sample.

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary due to the matrix of the sample.

Sample Comments

State of New Jersey Lab Certification No. PA011

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14903	NJ PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19128003	05/13/2019 11:43	Jason W Knight	1
14903	NJ PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19128003	05/14/2019 15:32	Jason W Knight	10
14904	NJ PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19128003	05/08/2019 08:45	Courtney J Fatta	1

*=This limit was used in the evaluation of the final result

Sample Description: **Field Blank Grab Water**
Solvay Solexis, Inc.

Project Name: **Solvay**

Submittal Date/Time: 05/03/2019 18:11
Collection Date/Time: 04/29/2019 09:00

Integral Consulting Inc.
ELLE Sample #: WW 1049826
ELLE Group #: 2042194
Matrix: Water

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14903	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.29	0.98	1
14903	Perfluorodecanoic acid	335-76-2	N.D.	0.88	2.0	1
14903	Perfluorododecanoic acid	307-55-1	N.D.	0.49	2.0	1
14903	Perfluoroheptanoic acid	375-85-9	N.D.	0.39	0.98	1
14903	Perfluorohexanesulfonic acid	355-46-4	N.D.	0.39	2.0	1
14903	Perfluorohexanoic acid	307-24-4	N.D.	0.39	2.0	1
14903	Perfluorononanoic acid	375-95-1	N.D.	0.39	2.0	1
14903	Perfluorooctanesulfonic acid	1763-23-1	N.D.	0.39	2.0	1
14903	Perfluorooctanoic acid	335-67-1	N.D.	0.29	0.98	1
14903	Perfluorotetradecanoic acid	376-06-7	N.D.	0.29	0.98	1
14903	Perfluorotridecanoic acid	72629-94-8	N.D.	0.39	0.98	1
14903	Perfluoroundecanoic acid	2058-94-8	N.D.	0.39	2.0	1

Sample Comments

State of New Jersey Lab Certification No. PA011

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14903	NJ PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19128003	05/13/2019 11:34	Jason W Knight	1
14904	NJ PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19128003	05/08/2019 08:45	Courtney J Fatta	1

*=This limit was used in the evaluation of the final result

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Quality Control Summary

Client Name: Integral Consulting Inc. Group Number: 2042194
Reported: 05/15/2019 14:15

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	ng/l	ng/l	ng/l
Batch number: 19128003	Sample number(s): 1049825-1049826		
Perfluorobutanesulfonic acid	N.D.	0.30	1.0
Perfluorodecanoic acid	N.D.	0.90	2.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanoic acid	N.D.	0.40	1.0
Perfluorohexanesulfonic acid	N.D.	0.40	2.0
Perfluorohexanoic acid	N.D.	0.40	2.0
Perfluorononanoic acid	N.D.	0.40	2.0
Perfluorooctanesulfonic acid	N.D.	0.40	2.0
Perfluorooctanoic acid	N.D.	0.30	1.0
Perfluorotetradecanoic acid	N.D.	0.30	1.0
Perfluorotridecanoic acid	N.D.	0.40	1.0
Perfluoroundecanoic acid	N.D.	0.40	2.0

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19128003	Sample number(s): 1049825-1049826								
Perfluorobutanesulfonic acid	9.62	10.04	9.62	10.31	104	107	70-130	3	30
Perfluorodecanoic acid	10.88	12.46	10.88	12.55	115	115	70-130	1	30
Perfluorododecanoic acid	10.88	10.58	10.88	11.63	97	107	70-130	9	30
Perfluoroheptanoic acid	10.88	12.5	10.88	13.25	115	122	70-130	6	30
Perfluorohexanesulfonic acid	10.29	10.49	10.29	11.87	102	115	70-130	12	30
Perfluorohexanoic acid	10.88	12.76	10.88	12.55	117	115	70-130	2	30
Perfluorononanoic acid	10.88	12.62	10.88	12.42	116	114	70-130	2	30
Perfluorooctanesulfonic acid	10.4	10.43	10.4	11.34	100	109	70-130	8	30
Perfluorooctanoic acid	10.88	12.09	10.88	12.22	111	112	70-130	1	30
Perfluorotetradecanoic acid	10.88	11.96	10.88	12.8	110	118	70-130	7	30
Perfluorotridecanoic acid	10.88	11.63	10.88	13.27	107	122	70-130	13	30
Perfluoroundecanoic acid	10.88	11.42	10.88	11.26	105	103	70-130	1	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Integral Consulting Inc. Group Number: 2042194
Reported: 05/15/2019 14:15

Labeled Isotope Quality Control

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: NJ PFAS in Water by LC/MS/MS
Batch number: 19128003

	13C3-PFBS	13C5-PFHxA	13C3-PFHxS	13C4-PFHpA	13C8-PFOA	13C8-PFOS
1049825	134	96	149*	97	93	88
1049826	94	95	95	99	98	91
Blank	85	88	88	94	92	90
LCS	77	85	86	91	91	86
LCSD	82	82	76	81	83	80
Limits:	26-148	35-138	34-126	35-126	48-122	50-121

	13C9-PFNA	13C6-PFDA	13C7-PFUnDA	13C2-PFDoDA	13C2-PFTeDA
1049825	63	86	84	91	91
1049826	95	91	89	83	78
Blank	95	92	87	86	85
LCS	90	91	85	84	81
LCSD	88	80	73	68	66
Limits:	41-144	47-125	30-128	39-130	26-119

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

20003 2042194 1049825-Co

CHAIN OF CUSTODY RECORD

SOLVAY SOLEXIS, INC.

Thorofare, New Jersey

Rev. 2 (11/06)

Date	Time	# of Containers	Sample Identification	PFAA	T.D.S.	T.S.S.	TOTAL FLUORIDE	TOTAL CHLORIDE	Analysis Requested: O & G	C.O.D.	T.O.C.	B.O.D.	TOTAL METALS Zn, Cu, As, Be, Cd, Cr, Pb, Hg, Ni	TOTAL Cn	V.O.A. EPA 624	V.O.A. EPA 624 (NOTE: 1)	V.O.A. 603 ACRYLONITRILE ONLY	B.N.A. EPA 625	SLUDGE CAKE ORGANICS (NOTE: 2)
4/29/19	0900	2	V915 (Grab, No Pres)	X															
4/29/19	0900	1	Field Blank (Grab, No Pres)	X															
4/29/19																			

Remarks: (Note: 1) 3 Compounds: Tetrachloroethylene, Trichloroethylene, 1,2 Dichloroethane
(Note: 2) 5 Compounds: Chloroform, 1,2 Dichloroethane, Methylene Chloride, Tetrachloroethylene, Trichloroethylene

☐ 3 Day Turnaround. Fax to ( ) –

	Date:	Time:	Received By:
Relinquished By: Mark D	Date: 5/3/19	Time: 1440	Received By: Mark D 5/3/19 1440
Relinquished By: Mark D	Date: 5/3/19	Time: 1811	Received By:
Relinquished By:	Date:	Time:	Received By: 5/3/19 1811

White – Lab Copy Canary – File Copy Pink – Return Copy

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Sample Administration Receipt Documentation Log

Doc Log ID: 248078

Group Number(s): 2042194

Client: Solvay Solexis

Delivery and Receipt Information

Delivery Method:	ELLE Courier	Arrival Timestamp:	05/03/2019 18:11
Number of Packages:	1	Number of Projects:	1

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	Yes
Samples Chilled:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Paperwork Enclosed:	Yes	Total Trip Blank Qty:	0
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Juan Carrion (16518) at 01:34 on 05/04/2019

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT42-03	0.1	DT	Wet	Y	Bagged	N

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mL**	milliliter(s)
C	degrees Celsius	**MPN**	Most Probable Number
cfu	colony forming units	**N.D.**	non-detect
CP Units	cobalt-chloroplatinate units	**ng**	nanogram(s)
F	degrees Fahrenheit	**NTU**	nephelometric turbidity units
g	gram(s)	**pg/L**	picogram/liter
IU	International Units	**RL**	Reporting Limit
kg	kilogram(s)	**TNTC**	Too Numerous To Count
L	liter(s)	**µg**	microgram(s)
lb.	pound(s)	**µL**	microliter(s)
m3	cubic meter(s)	**umhos/cm**	micromhos/cm
meq	milliequivalents	**MCL**	Maximum Contamination Limit
mg	milligram(s)		

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.